

WE CLAIM:

1. A method of generating and assembling secretory antibodies within a single cell, said method comprising:

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- a. introducing into the genome of a first member of a plant species a first mammalian nucleotide sequence encoding an immunoglobulin alpha heavy chain portion-containing polypeptide including a leader sequence forming a secretion signal, to produce a first transformant;
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- b. introducing into the genome of a second member of said plant species a second mammalian nucleotide sequence encoding a polypeptide linker or joining chain, to produce a second transformant;
- c. introducing into the genome of a third member of said plant species a third mammalian nucleotide sequence encoding a secretory component, to produce a third transformant;
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- d. sexually crossing said transformants to generate a progeny population containing all three mammalian sequences; and
- e. isolating from said progeny population a transgenic plant species producing a secretory antibody.

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2. The method of claim 1, wherein said method further comprises introducing into the genome of a fourth member of said plant species a fourth mammalian nucleotide sequence encoding an immunoglobulin light chain portion-containing polypeptide including a leader sequence forming a secretion signal, to produce a fourth transformant; sexually crossing said fourth transformant with said other transformants to generate a progeny population containing all four mammalian sequences; and isolating from said progeny population a transgenic plant species producing a

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secretory antibody.

3. The method of claim 1, wherein said first mammalian nucleotide sequence encodes a single-chain antibody.

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4. The method of claim 1, wherein said first mammalian nucleotide sequence encodes an immunoglobulin alpha heavy chain portion-containing polypeptide including more than one variable region.

5. The method of claim 1, wherein nucleotide sequences are introduced via separate vectors.

6. A transgenic plant comprising:

